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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RICCARDO CESARINI
and GIANFRANCO COLOMBO

Appeal 2008-5792
Application 10/679,357
Technology Center 1700

Decided:¹ February 11, 2009

Before TERRY J. OWENS, MARK NAGUMO, and
KAREN M. HASTINGS, *Administrative Patent Judges*.

NAGUMO, *Administrative Patent Judge*, dissenting in part.

Opinion for the Board filed by HASTINGS, *Administrative Patent Judge*.

DECISION ON APPEAL

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 39-62 and 111-158. We have jurisdiction under 35 U.S.C. § 6(b).²

We AFFIRM.

BACKGROUND

The invention relates to a tire tread design. Claim 111 is illustrative:

111. A tire for a vehicle, comprising:

a carcass structure;

a belt structure coaxially associated to the carcass structure; and

a tread coaxially extending around the belt structure;

wherein the tire comprises a curvature ratio not greater than 0.1,

wherein the carcass structure comprises a central crown portion and two sidewalls,

wherein each sidewall ends in a bead for anchoring the tire to a rim of a wheel,

wherein the tread comprises an equatorial zone and two shoulder zones,

wherein the equatorial zone extends on both sides of an equatorial plane of the tire,

wherein the two shoulder zones are disposed in axially-opposed positions with respect to the equatorial zone,

² An oral hearing was held in this case on January 13, 2009.

wherein the tread further comprises a plurality of transversal grooves,

wherein each transversal groove comprises an equatorial groove portion in the equatorial zone and a shoulder groove portion in one of the shoulder zones,

wherein the equatorial groove portion of each transversal groove has a uniform width;

wherein the transversal grooves are circumferentially distributed in groups alternately extending from the axially-opposed shoulder zones,

wherein the groups of transversal grooves define a plurality of substantially-continuous tread portions in the equatorial zone,

wherein each substantially-continuous tread portion ends at an equatorial groove portion of a same transversal groove of an axially-opposed group of transversal grooves,

wherein each of the transversal grooves ends at a predetermined distance from the equatorial groove portion of a longest transversal groove of the axially-opposed group of transversal grooves so that all of the transversal grooves end within the equatorial zone, and

wherein each substantially-continuous tread portion comprises a width wider than an adjacent transversal groove; and

wherein the substantially-continuous tread portions extend from said axially-opposed shoulder zones towards the equatorial plane of the tire to form a structurally stiff grid of elastomeric material portions fitted in with one another.

The Examiner relies upon the following prior art references in the rejections of the appealed claims:

Hargraves	US 1,996,418	April 2, 1935
Hoover	US 2,011,552	Aug. 13, 1935
Sommer	US 2,104,532	Jan. 04, 1938
Madec	US 4,446,902	May 08, 1984
Kuhr (hereinafter GB 472)	GB 2 224 472 A	May 09, 1990
Akiyama (as translated; hereinafter JP 408)	JP 04-0154408	May 27, 1992
Himuro	EP 0 565 270 A1	Oct. 13, 1993
Himuro (as translated; hereinafter JP 109)	JP 06-247109	Sept. 06, 1994
Guspodin	EP 0 722 851 A1	July 24, 1996
Admitted Prior Art (hereinafter AAPA)	Specification page 3, lines 1-7	

The Examiner has made the following rejections under 35 U.S.C. § 103(a):

(a) claims 135-141, 146, 149, 152, and 153 as being unpatentable over Hoover in view of Madec;

(b) claims 39-53, 55-58, 61, 62, 111-125, 127-130, 133-149, 151-154, and 157-158 as being unpatentable over JP 408 in view of GB 472, JP 109, AAPA, and optionally Sommer;

(c) claims 60, 132, and 156 as being unpatentable over the combination of JP 408, GB 472, JP 109, AAPA, optionally Sommer, and Guspodin;

(d) claims 39-53, 55-58, 111-125, 127-130, 135-149, and 151-154, as being unpatentable over Sommer in view of GB 472, AAPA and optionally at least one of Hargraves and Japan '109;

(e) Claims 54, 126, and 150 as being unpatentable over the combination of Sommer, GB 472, AAPA and optionally at least one of Hargraves and Japan '109, and Hirumo; and

(f) Claims 59-62, 131-134 and 155-158 as being unpatentable over the combination of Sommer, GB 472, AAPA and optionally at least one of Hargraves and Japan '109, and Guspodin.

FIRST ISSUE ON APPEAL

The 103 Rejection based on Hoover

Appellants do not argue any of the claims subject to this ground of rejection separately with any reasonable specificity (App. Br. 40-41). We therefore select independent claim 135 to represent this issue on appeal³.

The only argument Appellants present to rebut this obviousness rejection is that Hoover does not meet one of the claimed limitations.

Specifically, Appellants contend that Figure 1 of Hoover shows that each plurality of transversal grooves defines three ribs (i.e. “tread portions”) versus the two ribs as relied upon by the Examiner, and that one of these three ribs does not meet the claimed “each . . . tread portion ends at . . . a same transversal groove” as recited in claim 135 (App. Br. 40, 41, Claims Appendix p. xvi; Reply Br. 4-5)

The Examiner contends that Hoover describes a tire tread as claimed, and that each plurality of transversal grooves defines two ribs that each end at the same transversal groove.

The first issue on appeal arising from the contentions of Appellants and the Examiner are whether the Appellants have shown that the Examiner

³ See copy of claim 135 in the Claims Appendix of Appellants' Brief.

reversibly erred in rejecting claim 135 because Hoover does describe that each tread portion ends at “a same transversal groove of an axially opposed-group of transversal grooves” as recited in claim 135.

We answer this question in the negative.

PRINCIPLES OF LAW

Claim Construction

During examination, claim terms are given their broadest reasonable interpretation consistent with the specification. *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). Although claims are to be interpreted in light of the specification, limitations from the specification are not to be read into the claims. *See In re Van Geuns*, 988 F.2d 1181, 1184-85 (Fed. Cir. 1993); *see also, e.g., In re Zletz*, 893 F.2d 319, 321-22 (Fed. Cir. 1989). An applicant seeking a narrower construction must either show why the broader construction is unreasonable or amend the claim to expressly state the scope intended. *In re Morris*, 127 F.3d 1048, 1057 (Fed. Cir. 1997).

It is well established that the transitional term “comprising” is inclusive or open-ended and does not exclude any additional, unrecited elements. *See Mars, Inc. v. H.J. Heinz Co.*, 377 F.3d 1369, 1376 (Fed. Cir. 2004).

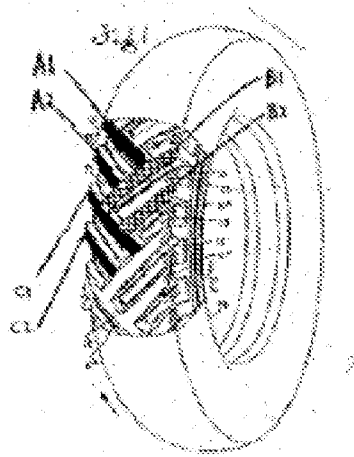
FINDINGS OF FACT

The following findings of fact are supported by a preponderance of the evidence. Additional findings of fact are presented in further sections of this opinion, including the analysis sections.

1. Claim 135 recites that the groups of grooves “define” a plurality of tread portions (*see* claim 135, Claims Appendix p. xvi).

2. The plain meaning of the word “define” encompasses “to determine or fix the boundaries or extent of” and “to make clear the outline or form of”⁴.

3. Figure 1 of Hoover is reproduced below (as marked up by the Examiner):



4. Figure 1 of Hoover as marked up by the Examiner shows that a plurality of grooves of Hoover (i.e., two grooves) determine or make clear the outline of a plurality of tread portions (i.e., two ribs labeled A1, A2, or B1, B2, or C1, C2).

5. Claim 135 is directed to a tire “comprising” the recited elements and also repeatedly uses the word “comprises” throughout the body of the claim.

⁴ “Define”, *The Random House College Dictionary* 348 (1973).

6. Claim 135 does not exclude additional unrecited tread portions that do not end at the “same transversal groove”.

ANALYSIS

The Appellants only dispute is with the Examiner’s claim interpretation of claim 135. Appellants contend that each plurality of grooves of Hoover as relied upon by the Examiner “must necessarily include” three ribs and not only two ribs as the Examiner contends (Reply Br. 4-5). Appellants contend that therefore each tread portion does not end at a same transversal groove as required by claim 135 (*id.*).

Claim 135 recites that the groups of grooves “define” a plurality of tread portions (that is, the two ribs of Hoover). There is nothing in the claim, nor any definition in Appellant’s Specification, that limits the word “define” in the narrow sense that Appellants urge. A fair reading of the claim permits the Examiner’s interpretation thereof - that a plurality of grooves of Hoover (i.e., two grooves as shown by the Examiner) determine or make clear a plurality of tread portions (i.e., two ribs of Hoover as shown by the Examiner). The alternating sets of two grooves and two ribs as delineated by the Examiner encompass the claimed limitations (see, Ans. 4, 5, 27-29). The alternating ribs (i.e., tread portions) delineated by the Examiner each end at a same transversal groove as required by claim 135.

Appellants arguments regarding the “substantially-continuously tread portion” in Hoover appears to be inconsistent with what Appellants regard as “substantially-continuously tread portion” in their own Figure 2. Substantial continuity is not destroyed by narrow slits, such as longitudinal slits 25-27 (Spec. 19, ll. 25-30), shown in Appellants’ Figure 2, which is reproduced *infra* (see Finding of Fact numbered 7). The continuity of the tread portion

in the equatorial zone above the dotted-dashed line towards the bottom of Figure 2 with the next “substantially-continuous tread portion” cannot be disputed. There is no dispute that the tread design shown in Figure 2 is within the scope of the claimed subject matter on appeal, so the claims must be broad enough to read on tires according to that Figure. In the same way, the continuity of tread portion A² with C¹ (as marked by the Examiner in modified Hoover Figure 1, *supra*), does not remove Hoover Figure 1 from the scope of the claimed subject matter. Moreover, the presence of the open ended transitional phrase “comprising” makes it clear that the tire tread may includes other tread portions (e.g., some that may be continuous with “substantially continuous tread portion[s]” that end at a same transversal groove). Claim 135 also states that the tread “*comprises* a plurality of transversal grooves” (emphasis provided), which further emphasizes that other unrecited grooves may exist in the tire tread, as well as other unrecited tread portions.

Thus, however the “substantially-continuous tread portion[s]” are apportioned, the language of the claims is broad enough to read on the pattern of Hoover Figure 1. Accordingly, the Examiner’s position is reasonable.

Appellants have therefore not shown that the Examiner erred in establishing that the tire tread of claim 135 is obvious over the combined teachings of Hoover and Madec.

SECOND ISSUE ON APPEAL

The 103 Rejection based on JP 408

Appellants do not argue any of the claims separately with any reasonable specificity, except for independent claims 39, 111, 135 (App. Br.

18-31).⁵ We therefore select independent claims 39, 111, and 135 to represent this issue on appeal.

Appellants contend that the combination of JP 408 with GB 472, JP 109, AAPA, or Sommer does not teach or suggest all the claimed limitations (App. Br. 18-29). Appellants further contend that the Examiner has failed to set forth sufficient motivation to combine the teachings of JP 408 with GB 472, JP 109, AAPA, or Sommer, since one would be changing the principle of operation of JP 408 (App. Br. 29-31; Reply Br. 6-7).

The Examiner contends that the combination of references as modified does teach or suggest all the claim limitations (see generally Ans.). The Examiner's position is that one of ordinary skill would have found it obvious to "connect the tread portions" of JP 408 (in other words, "omit" the zig-zag circumferential groove 7 of JP 408) in light of the teachings of GB 472 which would have motivated the artisan to remove all circumferential grooves in a tire tread design (e.g., Ans. 9-11). The Examiner additionally cites JP 109 and Sommer as evidence that known similar tire tread designs "connected" the tread portions (*id.*).

The second issue on appeal is: Have Appellants shown reversible error in the Examiner's determination that a person having ordinary skill in the art would have found it obvious to arrive at the claimed invention in view of the applied prior art combination of JP 408 with GB 472, JP 109, AAPA, or Sommer?

We answer this question in the negative.

⁵ No features of independent claims 58, 130, and 154, each drawn to a set of four tires versus a single tire, were separately argued versus their companion independent claims 39, 111, and 135, each drawn to a single tire.

ADDITIONAL PRINCIPLES OF LAW

A claimed invention is not patentable if the subject matter of the claimed invention would have been obvious to a person having ordinary skill in the art. 35 U.S.C. § 103(a); *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007); *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966).

Facts relevant to a determination of obviousness include (1) the scope and content of the prior art, (2) any differences between the claimed invention and the prior art, (3) the level of skill in the art, and (4) any relevant objective evidence of obviousness or non-obviousness. *KSR*, 127 S. Ct. at 1734; *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966).

“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR*, 127 S. Ct. at 1739. The question to be asked is “whether the improvement is more than the predictable use of prior art elements according to their established functions.” *KSR*, 127 S. Ct. at 1740.

The test for obviousness is what the *combined* teachings of the references would suggest to those of ordinary skill in the art. *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991); *In re Keller*, 642 F.2d 413, 425 (CCPA 1981).

“Non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references.” *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986).

It has been established that "in general, a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant".

See In re Gurley, 27 F.3d 551, 553 (Fed. Cir. 1994) (“The degree of teaching away will of course depend on the particular facts”).

“The prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed in the . . . application . . . [M]ere disclosure of alternative designs does not teach away.” *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004).

The Federal Circuit has stated that “[a]n obviousness determination is not the result of a rigid formula disassociated from the consideration of the facts of a case. Indeed, the common sense of those skilled in the art demonstrates why some combinations would have been obvious where others would not.” *Leapfrog Enter., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1161 (Fed. Cir. 2007).

It is well established that while the features of an apparatus claim may be recited functionally, the apparatus must be distinguished from the prior art in terms of structure, rather than function. *See In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997). Where an apparatus is claimed functionally rather than structurally and the PTO has reason to believe that a functional limitation is an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic. *Schreiber*, 128 F.3d at 1478.

ADDITIONAL FINDINGS OF FACT

7. Appellants' Figure 2 is reproduced below:

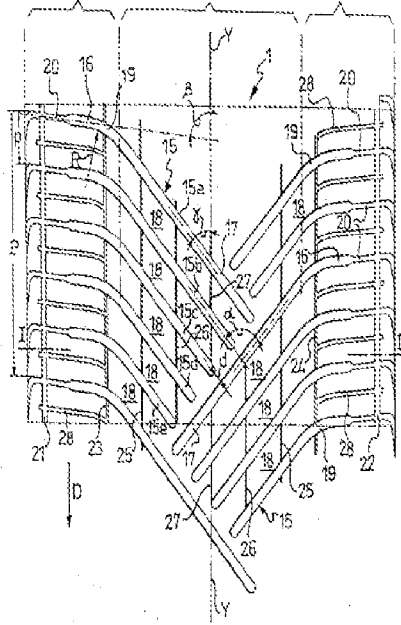


Figure 2 illustrates inclined alternating transversal grooves (15) and tread portions (18) of the tire tread. The center line Y-Y is the equatorial plane (Spec. 17:8-12).

8. JP 408 teaches a high performance tire tread design with alternating transversal grooves and tread portions (Figs. 1, 2). The tire has good water drainage, “equivalent to those of a conventional tire” (e.g., bottom of p. 7) and reduced noise (pp. 6-8).

9. GB 472 describes a tire tread with “steeply orientated herringbone-like profile” of alternating grooves and ribs (tread portions) such that the tread portions are continuously interconnected in the central region of the tire tread (p. 6: 6-30; Fig. 2).

10. GB 472’s tire tread avoids circumferential grooves that are known in prior art tread designs for water drainage (p. 1:18-34). GB 472 teaches that their long slanted grooves provide both effective drainage and minimal

noise as well as other improved properties, including “rolling resistance” (p. 2:6-28).

11. A side by side comparison of Figure 2 of JP 408 and Figure 2 of GB 472 is reproduced below:

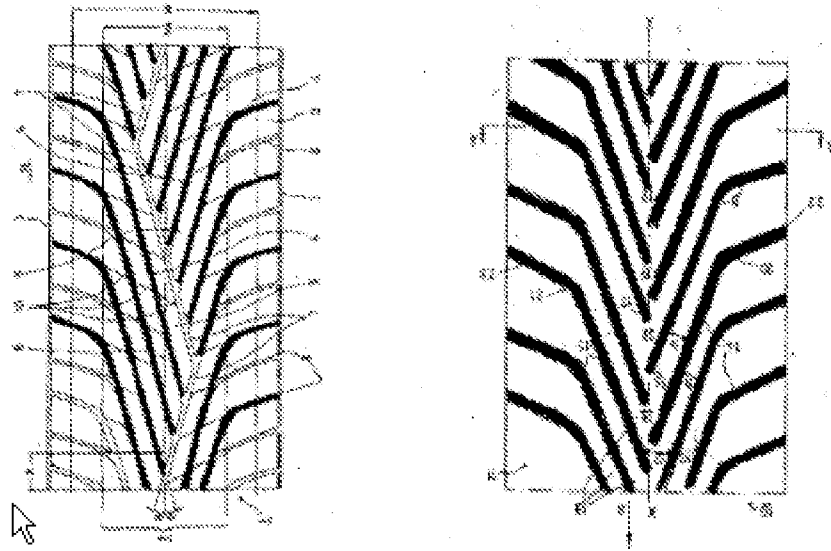


Figure 2 of JP 408 and Figure 2 of GB 472 have been altered by the Examiner to add the dark markings to fill in the transverse grooves (e.g., Ans. 10, 29). The zig-zag groove 7 in the center area of JP 408’s tire tread has not been filled in.

12. The longest marked groove of each alternating set of grooves of JP 408 crosses the equatorial plane (i.e., the center plane).

13. JP 109 describes a pneumatic radial tire having low noise and good water drainage wherein the tread contains alternating inclined transverse grooves and ribs (tread portions) such that the tread portions on either side of the tire are continuously interconnected near the central region of the tire tread (Fig. 1; abstract; pp. 12-13, ¶ [0019]-[0024]).

14. JP 109 describes that the inclined grooves may form either an asymmetric array or be arranged so that the equatorial plane is between them (p. 9, ¶ [0012]). Some of the inclined grooves cross the equatorial plane (Fig. 1).

15. Sommer describes a tire wherein the tread contains alternating inclined transverse grooves and ribs (tread portions) such that the tread portions on either side of the tire are continuously interconnected in the central region of the tire tread (Fig. 8, 8a). Some of the transverse grooves cross the equatorial plane (*id.*).

ANALYSIS

We fully agree with the Examiner's findings of fact and conclusion of obviousness based on the teachings of JP 408 with GB 472, JP 109, AAPA, or Sommer (Ans. 6-16, 29-39, 45-46). We add the following primarily for emphasis.

Appellants' contention that the combination of JP 408 with GB 472, JP 109, AAPA or Sommer does not teach or suggest all the claimed limitations is unpersuasive (App. Br. 18-29). Appellants are attacking the obviousness of the combination merely by improperly attacking the references individually, when the rejection is instead based upon the combined teachings of the references. The test for obviousness is what the *combined* teachings of the references would have suggested to those of ordinary skill in the art.

Appellants conclusion that the combination would not result in the "structurally stiff grid" of independent claim 111 (App. Br. 26) is not well taken, since once one connects the tread portions of JP 408 as proposed by the Examiner (by omitting the zig-zag groove 7 of JP 408), this claim would

indeed encompass the modified tread design (see, e.g., Ans. 29-30). This is further supported by the breadth of this claim limitation, as “stiff” is a relative term. Likewise, contrary to Appellants’ contentions, once one connects the tread portions of JP 408 as proposed by the Examiner, the limitations of independent claim 39 and independent claim 135 (e.g., that “stresses . . . are discharged along the axis”) would also encompass the modified tread design, as fully explained by the Examiner (e.g., Ans. 14, 15, 36-38).

Appellants further contend that there is no motivation or suggestion to combine the teachings of the applied references (App. Br. 29-30; Reply Br. 6-7). None of Appellant’s arguments convince us of reversible error in the Examiner’s conclusion of obviousness.

Appellants main argument is that JP 408’s zig-zag circumferential groove 7 is essential to its design, and that its removal as proposed by the Examiner would interfere with the functioning of the tire (App. Br. 29-30). We disagree.

JP 408’s main focus is eliminating straight longitudinal grooves in a tire design (p. 3-4). Contrary to Appellants’ contention, JP 408 nowhere describes that groove 7 is “essential” to its tire design. Appellants have not cited anything in the prior art references that would discourage or dissuade one from the path followed by Appellants. *Gurley*, 27 F. 3d at 553. The possibility of more than one alternative in the prior art for the specific tire tread design does not teach away from any of these alternatives because Appellants have not pointed to anything which criticizes, discredits or otherwise discourages the solution claimed in the application. *Fulton*, 391 F.3d at 1201.

As the Examiner pointed out, the applied prior art as a whole suggests the desirability of groups of alternately arranged slanted transversal grooves located within a tire tread. The GB 472, JP 109 and Sommer references exemplify that, in general, it was well known in the prior art to make these types of grooves in such a manner that the tread portions between them are “connected” as discussed in detail by the Examiner (e.g., Ans. 9-10). Furthermore, as the Examiner pointed out, the directional tread patterns of JP 408 and GB 472 are both structurally and functionally similar (Ans. 10, 11). Combining the known features of alternating inclined transverse grooves, as taught in JP 408, with the known feature of inclined transverse grooves uninterrupted by any circumferential grooves, as taught in GB 472, would have obtained the predicted and expected result of a tire with good drainage, low noise, insensitivity to rain grooves and high rolling resistance (see, e.g., Ans. 35).

JP 408 teaches the desirability of reduced noise and describes that their tire tread pattern reduces noise (see, e.g., p.7, third para.; “this structure makes it possible to improve the uniformity of the tire while reducing the pattern noise”). Similarly, GB 472 describes that the “herringbone-like profiling” tread design, which is similar to that of JP 408 but without any center circumferential groove as in JP 408, results in “minimal noise” as well (p. 2, ll. 15-23). Therefore, one of ordinary skill in the art would have reasonably expected that eliminating the center groove of JP 408 would still result in a tire tread of reduced noise. This further supports the obviousness of the tire tread design required by claim 39, 111 and 135.

Moreover, Appellants’ arguments miss the thrust of the Examiner’s rejection, i.e., the obviousness of ensuring that the tread portions of JP 408

are connected as exemplified in each secondary reference. It is well settled that it is not necessary for a finding of obviousness that all the features of one reference be bodily incorporated into the invention of another reference. *In re Griver*, 354 F.2d 377, 381 (CCPA 1966); *see also In re Billingsley*, 279 F.2d 689, 691 (CCPA 1960) (prima facie obvious to provide grooves as shown in a tire tread of one prior art reference into the differing specific tire tread of another prior art reference).

Recently, in *KSR Int'l Co. v. Teleflex Inc.*, the Supreme Court advised that the analysis in support of a conclusion of obviousness need not seek out express teachings that are directed to the subject matter of Appellants' claim since "the inferences and creative steps that a person of ordinary skill in the art" would have employed can be considered. *KSR*, 127 S. Ct. at 1740-41. One of ordinary skill in the art is "also a person of ordinary creativity, not an automaton". *KSR*, 127 S. Ct. at 1742. Certainly, skill in the art is presumed and based on the collective teachings of the applied prior art, we find that one of ordinary skill in the art would have appreciated that connecting the tread portions in the center of JP 408's tire would have achieved the predictable result of ensuring increased stability (e.g., rolling resistance, non-skid facility and absorption of lateral forces). *Id.* at 1739, 1740. *See also Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1364 (Fed. Cir. 2007) (the expectation of success need only be reasonable, not absolute).

Further, it is well established that it is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant. *See, e.g., Kahn*, 441 F.3d at 988, (Fed. Cir. 2005) ("In considering motivation in the obviousness analysis, the problem examined is not the specific problem solved by the invention but the general problem that

confronted the inventor before the invention was made”). *See also, KSR*, 127 S. Ct. at 1742 (“[A]ny need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.”). One of ordinary skill in the art would have appreciated that one way to ensure a reliable and more stable tire tread design for JP 408 would have been to interconnect the tread portions as is well known in similar tire tread designs as exemplified by GB 472, JP 109, and Sommer.

Additionally, Appellants have presented no pertinent evidence of unexpected results to rebut the Examiner’s *prima facie* case. It is axiomatic that the burden rests with Appellants to establish that the results are unexpected, based on comparisons with the closest prior art, and commensurate in scope with the claimed subject matter. *See, e.g., In re Kulling*, 897 F. 2d 1147, 1149 (Fed. Cir. 1990). We determine that Appellants have not met this burden. Although Appellants state that evidence in the Specification shows “unexpected increase in performance of the claimed tire as compared to conventional tires” (App. Br. 20)⁶, no comparison of the invention has been made to the closest prior art; that is, a tire tread with alternating groups of slanted transversal grooves (such as in JP 408). Further, the tests results are based on specific configurations of the transversal groove angles of the front and rear tires (see, e.g., Spec. 21:18-20), which are not commensurate in scope with the claimed subject matter.

⁶ Appellants do not refer to this evidence (i.e., the test results in their Specification) with respect to the alternative § 103 rejections (based on Hoover or Sommer as the primary reference) in their briefs. However, to the extent they may rely on these test results, this evidence is inadequate to show unexpected results for the same reasons given here.

We have considered Appellant's other arguments in the Appeal Brief and Reply Brief, but do not find any of them persuasive.

Thus, we sustain the Examiner's § 103 rejection of claims 39, 111, and 135, as well as the claims not separately argued, based on the combined teachings of JP 408 with GB 472, JP 109, AAPA or Sommer.

With respect to the § 103 rejection of dependent claims 60, 132 and 156, Appellants present no additional arguments other than those relied upon for independent claims 39, 58, 111, 130, 135, and 154⁷.

Thus, we also sustain the Examiner's § 103 rejection of claims 60, 132 and 156.

THIRD ISSUE ON APPEAL

The 103 Rejection based on Sommer

Appellants do not argue any of the claims separately with any reasonable specificity, except for independent claims 39, 111, 135 (App. Br. 31-40). We therefore select independent claims 39, 111, and 135 to represent this issue on appeal.

Appellants contend that the combination of Sommer with GB 472, AAPA, Hargraves, and JP 109 does not teach or suggest all the claimed limitations; specifically, Sommer does not teach that the longest groove crosses the equatorial plane as required by claim 39, nor is the grid of Sommer "structurally stiff" as required by claim 111, nor are stresses "discharged along the axis" as required by claim 135 (App. Br. 32-37).

⁷Claims 60, 132 and 156 depend from claims 58, 130, and 154, respectively. No features of independent claims 58, 130, and 154, each drawn to a set of four tires versus a single tire, were separately argued versus their companion independent claims 39, 111 and 135, each drawn to a single tire.

Appellants further contend that the Examiner has failed to set forth sufficient motivation to combine these prior art teachings, since Sommer does not indicate that the tire tread design therein is in need of improvement (App. Br. 38-40).

The Examiner contends that the combination of references as modified does teach or suggest all the claim limitations (Ans. 16-23). The Examiner maintains that the longest groove of Sommer does indeed cross the equatorial plane (e.g., Ans. 40), and that Appellants' claim language regarding "structurally stiff" and "stresses . . . are discharged along the axis" do not define over the applied prior art.

The third issue on appeal is: Have Appellants shown reversible error in the Examiner's determination that a person having ordinary skill in the art would have found it obvious to arrive at the claimed invention in view of the applied prior art combination of Sommer with GB 472, AAPA, Hargraves, and JP 109 because Sommer does not teach or suggest that the longest groove crosses the equatorial plane, or that the tread forms a "structurally stiff grid", or that "stresses are discharged along the axis" of Sommer's tire?

We answer this question in the negative.

ADDITIONAL FINDINGS OF FACT

15. Sommer describes a tire tread design with slanted (i.e., inclined) transverse grooves arranged in alternate sets on each side of a tire's center plane (i.e., the equatorial plane). (See Fig. 8, 8a).

17. Fig 8a of Sommer is reproduced below:

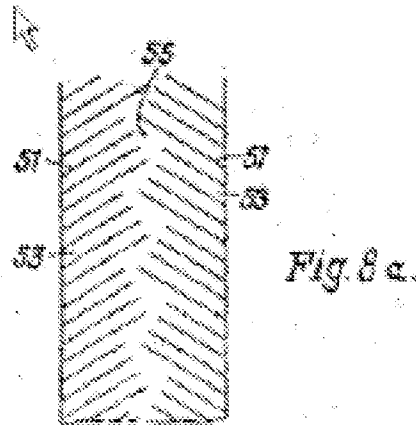


Fig 8a show a zig-zag strip 55 of tire tread running with the center plane of the tire.

18. Sommer states:

The grooves are of different length in such a manner that *in the center plane of the tire a zig zag stripe exists* which may be defined as a rib of small width substantially running parallel with the center plane of the tire.

(Sommer p. 3, col. 1 , ll. 13-17 ; emphasis provided).

19. One of ordinary skill in the art would have immediately appreciated from Figures 8, 8a and their description in Sommer that the longest groove of each set in Sommer may cross the equatorial plane in order to form the zig-zag strip described therein. Sommer does not discourage or disparage extending the longest groove past the equatorial plane.

20. One of ordinary skill in the art would have known that inclined grooves that cross the equatorial plane are known in similar tire tread designs (see, e.g., Hargraves which describes a tire tread design wherein some of the alternating inclined grooves (Fig. 1, 5) from each shoulder cross

the equatorial plane; see also FF 13, 14 regarding JP 109 which depicts tire tread designs wherein some of the inclined grooves may cross the equatorial plane (Fig. 1, 3) and exemplifies an alternative design wherein the inclined grooves do not cross the equatorial plane (Fig. 2)). 21. Sommer's tire tread portions form a "structurally stiff grid" in that Sommer's tire is designed for automobiles running on wet as well as dry roads (e.g., p.1, ll. 1-12).

22. Appellants' Specification does not explicitly define or limit the "stiffness" for the "structurally stiff grid" of the invention.

23. Appellants' Specification does not define or quantify the amount of "*stresses* imparted to the substantially-continuous tread portions [that] are *discharged along the axis* [of the tire]" (claim 135; emphasis provided).

24. It would have been immediately appreciated by one of ordinary skill in the art that at least some stresses imparted to substantially-continuous tread portions of Sommer's tire during tire rolling would be discharged along the axis of the tire.

25. Appellants have provided no evidence to show that stresses imparted to the substantially-continuous tread portions of Sommer's tire during tire rolling will not be discharged along the axis of the tire.

ADDITIONAL PRINCIPLE OF LAW

It is well established that "[d]rawings are evaluated 'on the basis of what they reasonably disclose and suggest to one skilled in the art'". See *In re Aslanian*, 590 F.2d 911, 914 (CCPA 1979); *see also In re Mraz*, 455 F.2d 1069, 1072 (CCPA 1972) (although patent drawings need not be drawn to scale, this does not mean that relative proportions shown in the drawings should be disregarded.)

ANALYSIS

We agree with the Examiner's findings of fact and conclusion of obviousness based on the teachings of Sommer with GB 472, AAPA, Hargraves and JP 109 (Ans. 16-21; 39-46). We add the following primarily for emphasis.

Contrary to Appellants' contention, we find that Sommer clearly suggests that the longest groove of each set crosses the equatorial plane (i.e. the center plane) of the tire, as required by independent claim 39, in order to form the zig-zag strip described in Sommer. Sommer's drawings can and should be considered for everything they reasonably appear to show in the context of the entire document. We do not agree with Appellants that the written description of Sommer only supports that the grooves "terminate at the center plane" (App. Br. 32-33). The description of Sommer that the "grooves and ribs [run] from the sides to its center plane" (p. 3, ll. 1-3) is consistent with finding that some of the grooves cross the center plane, when viewed in light of the further written description that requires a zig zag stripe/rib "substantially running parallel with the center plane", as well as the Figures 8, 8a. Further, the claim language encompasses the longest groove extending only a minute amount past the center plane. Sommer also does not in any way discourage or disparage the use of a groove that runs past the center line to form the zig zag stripe.

However, even assuming *arguendo* that Sommer's grooves end at the center plane as Appellants contend, one of ordinary skill in the art would have found it *prima facie* obvious to extend at least the longest groove of each set of Sommer past the center line to form the zig-zag rib as described in Sommer. This is supported by other similar tire tread designs cited by the

Examiner which depict the longer inclined grooves extending past the center plane (e.g., Hargraves and JP 109).

Appellants' argument that the grid of Sommer is not "structurally stiff" as required by claim 111 is not well taken, since "stiff" is a relative term, and Appellants' Specification does not define the "stiffness" of the "structurally stiff grid" of the invention.

While Appellants are free to functionally recite the characteristics of the features of an apparatus claim, the apparatus must be distinguished from the prior art in terms of structure, rather than function. *See Schreiber*, 128 F.3d at 1477. Since the tire tread structure recited in independent claim 135 encompasses the structure of Sommer's tire, as modified by the additionally applied prior art, the function of discharging stresses along the axis would have naturally followed. Appellants provide no evidence or convincing line of technical reasoning to explain why "stresses" imparted to Sommer's tire during tire rolling would not be "discharged along the axis of the tire", as required by claim 135.

We agree with the Examiner that the independent claims fail to require that the transversal grooves of one side of the tire tread end at the same "predetermined distance from the equatorial groove portion of a longest transversal groove" of the opposed side of the tire tread (Ans. 19-20). While the Specification discloses such an embodiment, we must be careful not to read a particular embodiment appearing in the written description into the claim if the claim language is broader than the embodiment. *See Superguide Corp. v. DirecTV Enterprises, Inc.*, 358 F.3d 870, 875 (Fed. Cir. 2004). Furthermore, Appellants have had the opportunity to amend the claims to achieve more precise claim coverage,

i.e., to limit the claim to each transversal groove ending at the same predetermined distance from the longest equatorial groove, but did not do so. *See In re Icon Health and Fitness, Inc.*, 496 F.3d 1374, 1379 (Fed. Cir. 2007) (“Because Icon could have amended its claims to more clearly define ‘stably retain’ and did not do so, it now must submit to the Board’s interpretation.”).

We therefore find it unnecessary to rely upon Hargraves for this feature⁸.

Appellants’ contention that no motivation exists to modify Sommer, because Sommer does not suggest any need for improvement, is not well taken. There is no requirement under 35 U.S.C. § 103 that a prior art reference expressly indicate a need for improvement.

The Examiner explained in detail the rationale for the obviousness rejection (e.g., Ans. 16-23). Appellants do not dispute the Examiner’s findings with respect to modifying Sommer to provide the tire construction (e.g., carcass, sidewalls, beads, belt) of GB 472, nor with respect to modifying Sommer to provide the admitted prior art curvature ratio, nor with respect to modifying Sommer to provide grooves with narrower width in the shoulder groove portion as taught in JP 109. Appellants’ main contentions are with Sommer *per se*, and have been addressed above.

We have considered Appellant’s other arguments in the Appeal Brief and Reply Brief, but do not find any of them persuasive.

⁸ The Examiner relied upon Hargraves, if needed, for the feature of ending each transverse groove of Sommer at the same predetermined distance (Ans. 19-20).

Thus, we sustain the Examiner's § 103 rejection of claims 39, 111, and 135 as well as not separately argued claims 40-53, 55-58, 112-125, 127-130, 136-149, and 151-154, based on the applied prior art.

With respect to the § 103 rejections of dependent claims 54, 126, 150, and 59-62, 131-134, and 155-158, Appellants present no additional arguments other than those relied upon for independent claims 39, 58, 111, 130, 135, and 154⁹.

Thus, we also sustain the Examiner's § 103 rejections of these claims.

CONCLUSION

First, Appellants have not shown that the Examiner reversibly erred in rejecting claim 135 as unpatentable over Hoover and Madec because, Hoover does not describe that each tread portion ends at "a same transversal groove of an axially opposed-group of transversal grooves" as recited in claim 135.

Appellants have also not shown that the Examiner reversibly erred in establishing a prima facie case of obviousness of the claimed invention over the combined teachings of JP 408 with GB 472, JP 109, AAPA, or Sommer.

Finally, Appellants have not shown that the Examiner reversibly erred in establishing a prima facie case of obviousness of the claimed invention over the combined teachings of Sommer, GB 472, AAPA, Hargraves, and JP 109.

⁹No features of independent claims 58, 130, and 154, each drawn to a set of four tires versus a single tire, were separately argued versus their companion independent claims 39, 111 and 135, each drawn to a single tire.

ORDER

All of the rejections made by the Examiner under 35 U.S.C. § 103(a) are affirmed.

The Primary Examiner's decision is affirmed.

No time period for taking any subsequent action in connection with this appeal maybe extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

NAGUMO, *Administrative Patent Judge*, dissenting in part.

While I agree with the conclusions of my colleagues as to the affirmance of Rejection (a), based on Hoover, and as to Rejections (d) through (f), based on Sommer, I must, respectfully, dissent from the findings and conclusions as to Rejections (b) and (c), based on JP 408.

In my view, the critical limitation in Rejections (b) and (c) is:

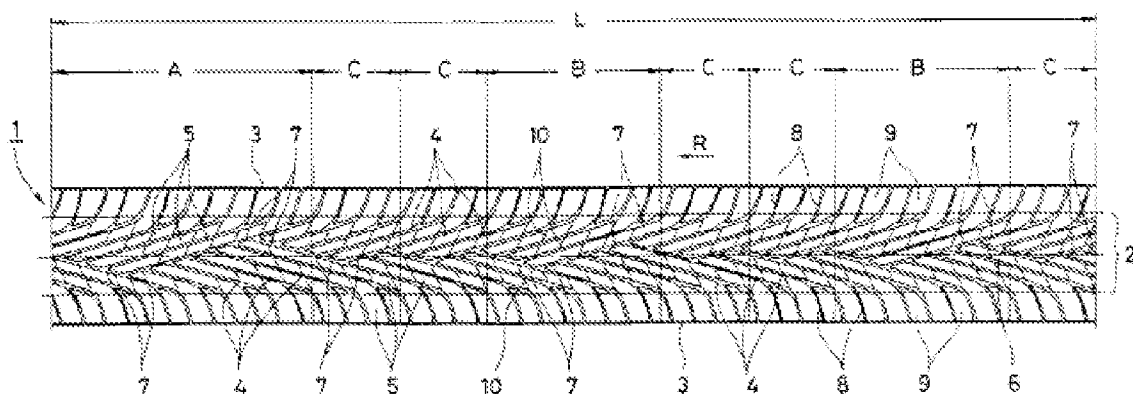
[X] wherein each substantially-continuous tread portion ends at an equatorial groove portion of a same transversal groove of an axially-opposed group of transversal grooves

(Br., Claims App. ix (Claim 111); bracketed labels added.)

JP 408

The overall structure of the tire tread taught by JP 408 is most clearly shown in Figure 1, which is reproduced below:

第 1 図



{JP 408 Figure 1 is said to show a tire tread structure.}

Comparison with larger-scale JP 408 Figure 2, reproduced *supra* in the majority opinion, shows that circumferential groove [7] is the long “zig-

zag” groove meandering along the center of the tread. Shorter transverse grooves [4] of the group connect into the longest transverse groove, and the connection of the longest transverse groove of the group starts a new group, forming another segment of circumferential groove [7].

The Examiner determined that limitation [X] would have been obvious in view of the combined teachings of JP 408 and the other references because it would have been obvious to terminate transverse grooves [4] before they connect with the longest groove [4] from the opposing set of transverse grooves. (Ans. 9-10.) The Examiner noted that this procedure would result in substantially continuous tread portions ending at a transverse groove, and also would result in the elimination of the circumferential groove [7]. (Ans. 9.)

In my view, Appellants’ argument that the zig-zag circumferential groove [7] is critical to the design and function of the JP 408 tire tread [Br. 29-30] is supported by at least a preponderance of the evidence of record. JP 408 describes an invention in which circumferential continuous grooves are described as playing a critical role in the structure and function of the tire. In addition to providing drainage, the plurality of parallel continuous grooves are said to define a noise-limiting structure.

In the words of JP 408:

block rows are surrounded by a plurality of *parallel continuous grooves* that are extended diagonally from the center region to the shoulder regions on said tread surface instead of straight grooves that run in the tire’s circumferential direction; and in which said block rows . . . cross one another at the center region in units of 1 or multiple blocks . . .

(JP 408 4, 2d full para.; emphasis added.) The blocks form cycle pitches [A], [B], and [C], which, as shown in Figure 1, *supra*, have different lengths. According to JP 408, the random alignment in the circumferential direction of the tire leads to the reduced noise. (*Id.* at 5, first para.) Moreover, the groove area ratios of the cycle pitches, and the depths of the multiple continuous grooves, are said to be the same “in the circumferential cross section of the tire.” (*Id.*) In the words of JP 408, “this structure makes it possible to improve the uniformity of the tire while reducing the pattern noise.” (JP 408 7, 3d para.)

Neither the Examiner nor my colleagues have shown that the modifications of the JP 408 tread pattern required to meet the limitations of Appellants’ claims are consistent with the reasons JP 408 gives for the properties and function of its tire. Thus, Appellants’ contention (which is supported by the disclosure of JP 408)—that these features are critical aspects of the invention taught by JP 408—has not been rebutted. Because the rejection maintained by the Examiner “destroys” this reference without providing adequate justification, I conclude that Rejections (b) and (c) must be REVERSED.

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